WE CLAIM:

1. A method of forming a cover on a golf ball comprising:

positioning a spherical uncovered golf ball product in the center of a mold, the mold having a spherical mold surface,

closing the mold around the golf ball product,

mixing a polyurethane prepolymer and a curing agent to form a thermoset reaction mixture,

injecting the reaction mixture into the mold to cover the golf ball product therein,

allowing the reaction mixture to gel and form a golf ball, and

opening the mold and removing the golf ball within about 10 to 60 seconds after the injecting step.

2. The method of claim 1 in which the spherical mold surface includes projections for forming dimples in the cover of the golf ball.

3. The method of claim 1 in which said step of injecting the reaction mixture into the closed mold is performed within 0.5 to 10 seconds.

4. The method of claim 1 in which the polyurethane prepolymer has a viscosity of less than 1000 cps.

5. The method of claim 4 in which the curing agent has a viscosity of less than 2000 cps at 25°C.

6. The method of claim 1 in which the curing agent has a viscosity of less than 2000 cps at 25°C.

7. The method of claim 1 in which the uncovered golf ball product is a wound golf ball core.

8. The method of claim 1 in which the uncovered golf ball product is a solid core.

9. The method of claim 1 in which the uncovered golf ball product comprises a solid core and a mantle layer surrounding the core.

10. The method of claim 1 in which the uncovered golf ball product comprises a solid core and a lattice structure over the core.

11. The method of claim 1 in which the polyurethane prepolymer is selected from the class consisting of meta-toluene diisocyanate, 4,4'-diphenylmethane diisocyante, p-mdi, 3,3'-dimethyl-4,4- biphenyl diisocyanate, naphthalene diisocyanate, and para-phenylene diisocyanate.

12. The method of claim 1 in which the mold is opened and the golf ball is removed about 45 seconds after the injecting step.

13. A method of forming a golf ball product comprising the steps of:

mixing a polyurethane prepolymer and a curing agent to form a thermoset reaction mixture,

injecting the reaction mixture into a closed mold having a cavity,

allowing the reaction mixture to gel and form a molded product, and

opening the mold and removing the molded product within about 10 to 60 seconds after the injecting step.

14. The method of claim 13 in which said step of injecting the reaction mixture into the closed mold is performed within 0.5 to 10 seconds.

15. The method of claim 13 in which the mold cavity is spherical.